

Patent Claims

1 1. A thread milling or cutting tool comprising:
2 a) a carrier piece rotatable around an axis of rotation,
3 b) at least one cutting element releasably attachable or attached on the
4 carrier piece, and
5 c) at least one fastening element releasably attachable or attached on the
6 carrier piece, wherein
7 d) at least one cutting element has no hole for attachment by means of a
8 fastening screw,
9 e) but is positively and/or non-positively attachable or attached between
10 the carrier piece and at least one fastening element and/or between at least two
11 fastening elements.

1 2. The thread milling or thread cutting tool in accordance with Claim 1, wherein
2 each fastening element lies in a fixed condition tightly against the associated cutting
3 element for the outside, so that it fixes the cutting element, and in a released condition
4 of the fastening element or elements the associated cutting element may be removed
5 from the carrier piece.

1 3. The thread milling or cutting tool in accordance with Claim 2, wherein at least
2 one fastening element in the released condition is still connected with the carrier piece,
3 in particular via the connecting means, in particular with separation.

1 4. The thread milling or cutting tool in accordance with Claim 2, wherein at least
2 one fastening element in the released condition may be removed or is removed
3 completely from the carrier piece.

1 5. The thread milling or cutting tool in accordance with Claim 1, wherein at the
2 least one cutting element may be clamped or is clamped between the carrier piece and
3 the at least one fastening element and/or between at least two fastening elements.

1 6. The thread milling or cutting tool in accordance with Claim 5, wherein at least
2 one fastening element is made as a clamping wedge and/or essentially prismatic at
3 least in the area of clamping with the cutting element and/or exerts a clamping wedge
4 action on the cutting element.

1 7. The thread milling or cutting tool in accordance with Claim 1, wherein cutting
2 element and fastening element are in contact on a plane that extends in the direction
3 of the axis of rotation and encloses an angle with the radial direction.

1 8. The thread milling or cutting tool in accordance with Claim 1, wherein the
2 fastening element grips around the cutting element in the radial direction and pushes
3 against the carrier element.

1 9. The thread milling or cutting tool in accordance with Claim 1, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished.

1 10. The thread milling or cutting tool in accordance with Claim 1, wherein the
2 fastening element has a threaded section that may be screwed into the carrier piece for
3 the connecting means and a clamping section.

1 11. The thread milling or cutting tool in accordance with Claim 1, wherein the
2 cutting element in an area of contact with the fastening element has a recess, in
3 particular a circular segment recess, located in the edge area, that is made, in
4 particular, as a whistle notch or Weldon.

1 12. The thread milling or cutting tool in accordance with Claim 1, wherein the
2 carrier piece consists of two carrier piece elements, that preferably in each case are
3 made essentially rotation symmetrical.

1 13. The thread milling or cutting tool in accordance with Claim 12, wherein the
2 one carrier piece element has at least one receiving section for receiving and holding
3 the at least one cutting element, that preferably has at least one support for the cutting
4 element, extending in the axial direction.

1 14. The thread milling or cutting tool in accordance with Claim 12, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished, and wherein the one carrier piece element for the cutting
9 element has the bearing surface in the radial direction and the bearing surface in the
10 circumferential direction and that the other carrier piece element for the cutting
11 element has the bearing surface in the axial direction.

1 15. The thread milling or cutting tool in accordance with Claim 12, wherein a
2 carrier piece element has a cylindrical section, that may be located or is located in a
3 hole in the other carrier piece element, preferably a pressure fitting being present
4 between the cylindrical section of the one carrier piece element and the hole of the
5 other carrier piece element, and/or the connection between the two carrier piece
6 elements being made by means of a shrinking process or by means of a screw
7 connection.

1 16. The thread milling or cutting tool in accordance with Claim 1, with a quick
2 action tool system on an axial end turned away from at least one cutting element,
3 which quick action tool system preferably has a hollow clamping cone.

1 17. The thread milling or cutting tool in accordance with Claim 1, wherein supply
2 holes and/or supply grooves are made in the carrier piece, via which the area of the
3 cutting element may be supplied or is supplied with cutting oil.

1 18. The thread milling or cutting tool in accordance with Claim 17, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished, and wherein an undercut, which serves as a feed groove, is
9 made in the carrier piece between the radial bearing surface and the bearing surface in
10 the circumferential direction for the cutting element.

1 19. The thread milling or cutting tool in accordance with Claim 1, wherein at least
2 one cutting element has at least two cutting areas and/or projects on one side axially
3 over the carrier piece and/or has effective cutting edges directed radially inward.

1 20. A thread milling or cutting tool, comprising
2 a) a carrier piece rotatable around an axis of rotation,
3 b) at least one cutting element, and
4 c) at least one fastening element that is releasably attachable or releasably
5 attached on the carrier piece via at least one connecting means, in particular a screw
6 connection, wherein
7 d) the at least one cutting element being positively and/or non-positively
8 and releasably attachable or attached between the carrier piece and the at least one
9 fastening element and/or between at least two fastening elements, and wherein
10 e) each fastening element and each connecting means in each case being
11 located outside the cutting element and in each case neither penetrates the cutting
12 element nor is surrounded by the cutting element.

1 21. The thread milling or thread cutting tool in accordance with Claim 20, wherein
2 each fastening element lies in a fixed condition tightly against the associated cutting
3 element for the outside, so that it fixes the cutting element, and in a released condition
4 of the fastening element or elements the associated cutting element may be removed
5 from the carrier piece.

1 22. The thread milling or cutting tool in accordance with Claim 21, wherein at
2 least one fastening element in the released condition is still connected with the carrier
3 piece, in particular via the connecting means, in particular with separation.

1 23. The thread milling or cutting tool in accordance with Claim 21, wherein at
2 least one fastening element in the released condition may be removed or is removed
3 completely from the carrier piece.

1 24. The thread milling or cutting tool in accordance with Claim 20, wherein at the
2 least one cutting element may be clamped or is clamped between the carrier piece and
3 the at least one fastening element and/or between at least two fastening elements.

1 25. The thread milling or cutting tool in accordance with Claim 24, wherein at
2 least one fastening element is made as a clamping wedge and/or essentially prismatic
3 at least in the area of clamping with the cutting element and/or exerts a clamping
4 wedge action on the cutting element.

1 26. The thread milling or cutting tool in accordance with Claim 20, wherein cutting
2 element and fastening element are in contact on a plane that extends in the direction
3 of the axis of rotation and encloses an angle with the radial direction.

1 27. The thread milling or cutting tool in accordance with Claim 20, wherein the
2 fastening element grips around the cutting element in the radial direction and pushes
3 against the carrier element.

1 28. The thread milling or cutting tool in accordance with Claim 20, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished.

1 29. The thread milling or cutting tool in accordance with Claim 20, wherein the
2 fastening element has a threaded section that may be screwed into the carrier piece for
3 the connecting means and a clamping section.

1 30. The thread milling or cutting tool in accordance with Claim 20, wherein the
2 cutting element in an area of contact with the fastening element has a recess, in
3 particular a circular segment recess, located in the edge area, that is made, in
4 particular, as a whistle notch or Weldon.

1 31. The thread milling or cutting tool in accordance with Claim 20, wherein the
2 carrier piece consists of two carrier piece elements, that preferably in each case are
3 made essentially rotation symmetrical.

1 32. The thread milling or cutting tool in accordance with Claim 31, wherein the
2 one carrier piece element has at least one receiving section for receiving and holding
3 the at least one cutting element, that preferably has at least one support for the cutting
4 element, extending in the axial direction.

1 33. The thread milling or cutting tool in accordance with Claim 31, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished, and wherein the one carrier piece element for the cutting
9 element has the bearing surface in the radial direction and the bearing surface in the
10 circumferential direction and that the other carrier piece element for the cutting
11 element has the bearing surface in the axial direction.

1 34. The thread milling or cutting tool in accordance with Claim 31, wherein a
2 carrier piece element has a cylindrical section, that may be located or is located in a
3 hole in the other carrier piece element, preferably a pressure fitting being present
4 between the cylindrical section of the one carrier piece element and the hole of the
5 other carrier piece element, and/or the connection between the two carrier piece
6 elements being made by means of a shrinking process or by means of a screw
7 connection.

1 35. The thread milling or cutting tool in accordance with Claim 20, with a quick
2 action tool system on an axial end turned away from at least one cutting element,
3 which quick action tool system preferably has a hollow clamping cone.

1 36. The thread milling or cutting tool in accordance with Claim 20, wherein supply
2 holes and/or supply grooves are made in the carrier piece, via which the area of the
3 cutting element may be supplied or is supplied with cutting oil.

1 37. The thread milling or cutting tool in accordance with Claim 36, wherein the
2 carrier piece for the or each cutting element has at least one bearing surface in the
3 radial direction and/or at least one bearing surface in the circumferential direction
4 and/or at least one bearing surface in the axial direction and in the case of which the
5 cutting element may be fastened or is fastened between the fastening element and the
6 bearing surface in the radial direction and/or the bearing surface in the circumferential
7 direction and/or the bearing surface in the axial direction, preferably each bearing
8 surface being polished, and wherein an undercut, which serves as a feed groove, is
9 made in the carrier piece between the radial bearing surface and the bearing surface in
10 the circumferential direction for the cutting element.

1 38. The thread milling or cutting tool in accordance with Claim 20, wherein at
2 least one cutting element has at least two cutting areas and/or projects on one side
3 axially over the carrier piece and/or has effective cutting edges directed radially
4 inward.

1 39. A method for producing a thread milling or cutting tool comprising the steps:
2 a) producing a first carrier piece element, that has a receiving section for
3 at least one cutting element as well as a cylindrical section axially connected to the
4 receiving section;
5 b) producing a radial bearing surface and a bearing surface in the
6 circumferential direction for the at least one cutting element on the first carrier
7 element;
8 c) producing a second carrier piece element, that has a hole for receiving
9 the cylindrical section of the first carrier element;
10 d) producing an axial bearing surface for the at least one cutting element
11 on the second carrier piece element;
12 e) connecting the first and second carrier piece element fixedly after insertion
13 of the cylindrical section into the hole.

1 40. The method in accordance with Claim 39, wherein the bearing surfaces are
2 made according to step b) and d) by grinding.

1 41. The method in accordance with Claim 39, wherein the connection of the first
2 and the second carrier piece element according to step e) is made by means of thermal
3 shrinking.